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Release Notes for Cisco IOS Release 12.0(7)XK1 Feature Packs for Cisco 2600 Series Routers

March 20, 2000

These release notes describe Cisco IOS Release 12.0(7)XK1 feature packs for Cisco 2600 series routers. Use them with the documents listed in the "Related Documentation" section on page 23.

These release notes describe the following topics:

- How to Use These Release Notes, page 2
- What Is a Feature Pack?, page 2
- Memory Options, page 3
- Routers and Interfaces Supported, page 3
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How to Use These Release Notes

Use Table 1, “Cisco 2600 Series Default Memory and Upgrade Options,” to find the factory-default memory and available upgrades for your router.

Use Table 3, “Feature Pack Product Numbers,” to identify the software image to load.

Use Table 4, “Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements,” to find the memory required for this image.

Use the tables in the “Features by Feature Set” section on page 12 to identify the features supported in a feature set image.

What Is a Feature Pack?

A feature pack contains the following items:

- CD-ROM with the following software:
  - Cisco IOS feature set software images, which might include bundled modem firmware
  - Router Software Loader (RSL) program (a Windows 95 application)
  - Trivial File Transfer Protocol (TFTP) server application (for Windows 95 only)
- *Getting Started with the Router Software Loader* CD booklet
- Release notes (this document)
- Software license for using Cisco software in object code form on a single access server or router
- Documentation CD-ROM that contains all Cisco documentation

The heart of a feature pack is the CD-ROM that contains software images and the RSL, which is a Windows 95 application that loads an image onto a router or access server. Each feature pack CD-ROM contains at least one Cisco IOS feature set. The CD booklet *Getting Started with the Router Software Loader* explains how to use the RSL to install the router image. If you cannot use the RSL to load images, you can follow the instructions in the “Alternatives to RSL” section on page 18.

Before running the RSL, read the “Installing Software Images Using RSL” section on page 17. If you are loading software on a preconfigured router, you should save the router configuration file on your PC before beginning the image download process, as described in *Getting Started with the Router Software Loader.*

Memory Options

Table 1 describes default memory and upgrade options for Cisco 2600 series.

Table 1 Cisco 2600 Series Default Memory and Upgrade Options

Memory Type	Default	Upgrade Options
Flash	8 MB	16 MB Flash SIMM: MEM2600-16FS= 16 MB Flash SIMM: MEM2600-8U16FS=
DRAM	24 MB[1]	24 to 32 MB DRAM: MEM2600-24U32D= 24 to 48 MB DRAM: MEM2600-24U48D= 24 to 64 MB DRAM: MEM2600-24U64D=
DRAM DIMM	24 MB	4 MB DRAM DIMM: MEM2600-4D= 8 MB DRAM DIMM: MEM2600-8D= 16 MB DRAM DIMM: MEM2600-16D= 32 MB DRAM DIMM: MEM2600-32D=

1 Routers shipped after February 16, 2000, have 32 MB DRAM.

Routers and Interfaces Supported

The Cisco 2600 series includes the following routers:

- Cisco 2610
- Cisco 2611
- Cisco 2612
- Cisco 2613
- Cisco 2620
- Cisco 2621

These routers support the interfaces shown in Table 2.

Note Part numbers without an equals sign (=) identify products installed in a router at the factory. Part numbers followed by an equals sign identify the same products sold as spares (separately).

Table 2 Interfaces Supported on Cisco 2600 Series Routers

Interface, Network Module, or Data Rate[1]		Routers Supported
LAN Interfaces[2]	1- or 2-port Ethernet (10BaseT)	Cisco 2610, Cisco 2611, Cisco 2612
	1-port Token Ring (RJ-45)	Cisco 2612, Cisco 2613
	1- or 2-port Ethernet (10/100BaseT)	Cisco 2620, Cisco 2621
LAN Network Modules	1-port Ethernet	All Cisco 2600 series routers
	4-port Ethernet	All Cisco 2600 series routers
	1-port ATM-25 RJ-45 interface	All Cisco 2600 series routers
Serial Network Modules	16- or 32-port asynchronous	All Cisco 2600 series routers
	4- or 8-port asynchronous/synchronous serial low speed (128 kbps max)	All Cisco 2600 series routers

Table 2 Interfaces Supported on Cisco 2600 Series Routers (continued)

Interface, Network Module, or Data Rate[1]		Routers Supported
Multiport T1/E1 ATM Network Modules with Inverse Multiplexing over ATM (IMA)[3]	4-port T1 ATM network module with IMA (NM-4T1-IMA[=])	All Cisco 2600 series routers
	4-port E1 ATM network module with IMA (NM-4E1-IMA[=])	All Cisco 2600 series routers
	8-port T1 ATM network module with IMA (NM-8T1-IMA[=])	All Cisco 2600 series routers
	8-port E1 ATM network module with IMA (NM-8E1-IMA[=])	All Cisco 2600 series routers
Digital T1/E1 Packet Voice Trunk Network Modules and Multiflex Trunk WAN Interface Cards	1-port, 30-channel E1 voice/fax module, supports 30 channels of G.729a/b, G.726, G.711 and fax or 18 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, three PVDM-12s, and one VWIC-1MFT-E1[4] (NM-HDV-1E1-30[=])	All Cisco 2600 series routers
	1-port, enhanced 30-channel E1 voice/fax module, supports 30 channels of G.729a/b, G.726, G.729, G.728, G.723.1, G.711, and fax. Consists of one NM-HDV, five PVDM-12s, and one VWIC-1MFT-E1[5] (NM-HDV-1E1-30E[=])	All Cisco 2600 series routers
	2-port, 60-channel E1 voice/fax module, supports add/drop multiplexing (drop and insert); 60 channels of G.729a/b, G.726, G.711, and fax; or 30 channels of G726, G729, G723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, five PVDM-12s, and one VWIC-2MFT-E1-DI[6] (NM-HDV-2E1-60[=])	All Cisco 2600 series routers
	1-port, 24-channel T1 voice/fax module, supports 24 channels of G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, two PVDM-12s, and one VWIC-1MFT-T1[7] (NM-HDV-1T1-24[=])	All Cisco 2600 series routers
	1-port, enhanced 24-channel T1 voice/fax module, supports 24 channels of G.729a/b, G.726, G.729, G.728, G.723.1, G.711, and fax. Consists of one NM-HDV, four PVDM-12s, and one VWIC-1MFT-T1[4] (NM-HDV-1T1-24E[=])	All Cisco 2600 series routers
	2-port, 48-channel T1 voice/fax module, supports add/drop multiplexing (drop and insert); 48 channels of G.729a/b, G.726,G.711, and fax; or 24 channels of G726, G729, G723.1, G.728, G729a/b, G711, and fax. Consists of one NM-HDV, four PVDM-12, and one VWIC-2MFT-T1-DI[4] (NM-HDV-2T1-48[=])	All Cisco 2600 series routers
	High-density voice/fax network module spare (NM-HDV=)	All Cisco 2600 series routers
	12-channel packet voice DSP module upgrade spare (PVDM-12=)	All Cisco 2600 series routers
	1-port RJ-48 multiflex trunk - T1 (VWIC-1MFT-T1=)[4]	All Cisco 2600 series routers
	2-port RJ-48 multiflex trunk - T1 (VWIC-2MFT-T1=)[4]	All Cisco 2600 series routers
	2-port RJ-48 multiflex trunk with drop and insert - T1 (VWIC-2MFT-T1-DI=)[4]	All Cisco 2600 series routers
	1-port RJ-48 multiflex trunk - E1 (VWIC-1MFT-E1=)[4]	All Cisco 2600 series routers
	2-port RJ-48 multiflex trunk - E1 (VWIC-2MFT-E1=)[4]	All Cisco 2600 series routers
	2-port RJ-48 multiflex trunk with drop and insert - E1 (VWIC-2MFT-E1-DI=)[4]	All Cisco 2600 series routers

Table 2 Interfaces Supported on Cisco 2600 Series Routers (continued)

Interface, Network Module, or Data Rate[1]		Routers Supported
Dial, ISDN, and Channelized Serial Network Modules	1- or 2-port channelized T1/ISDN PRI	All Cisco 2600 series routers
	1- or 2-port channelized T1/ISDN PRI with CSU	All Cisco 2600 series routers
	1- or 2-port channelized E1/ISDN PRI balanced	All Cisco 2600 series routers
	1- or 2-port channelized E1/ISDN PRI unbalanced	All Cisco 2600 series routers
	4-or 8-port ISDN BRI S/T interface	All Cisco 2600 series routers
	4- or 8-port ISDN BRI U (NT1) interface	All Cisco 2600 series routers
	8- or 16-port analog modems	All Cisco 2600 series routers
E1/T1 Multiflex Voice/WAN Interface Cards[3]	1-port T1 multiflex trunk interface (VWIC-1MFT-T1)	All Cisco 2600 series routers
	1-port E1 multiflex trunk interface (VWIC-1MFT-E1)	All Cisco 2600 series routers
	2-port T1 multiflex trunk interface (VWIC-2MFT-T1)	All Cisco 2600 series routers
	2-port E1 multiflex trunk interface (VWIC-2MFT-E1)	All Cisco 2600 series routers
	2-port T1 multiflex trunk interface with drop and insert (VWIC-2MFT-T1-DI)	All Cisco 2600 series routers
	2-port E1 multiflex trunk interface with drop and insert (VWIC-2MFT-E1-DI)	All Cisco 2600 series routers
Voice/Fax Interface Cards	1- or 2-port voice interface card slots	All Cisco 2600 series routers
	2-port FXS voice/fax interface card[8]	All Cisco 2600 series routers with voice/fax network modules
	2-port E&M voice/fax interface card[3]	All Cisco 2600 series routers with voice/fax network modules
	2-port FXO voice/fax interface card[3]	All Cisco 2600 series routers voice/fax network modules
WAN Interface Cards	1-port ISDN BRI S/T interface (requires external NT1)	All Cisco 2600 series routers
	1-port ISDN BRI (NT1) U	All Cisco 2600 series routers
	1-port 56/64-kbps DSU/CSU	All Cisco 2600 series routers
	1-port T1/Fractional T1 with DSU/CSU	All Cisco 2600 series routers
	1-port high-speed serial (up to 2.048 Mbps)	All Cisco 2600 series routers
	2-port dual high-speed serial (up to 2.048 Mbps; asynchronous/ synchronous support)	All Cisco 2600 series routers
	2-port asynchronous/synchronous (up to 128 kbps)	All Cisco 2600 series routers
Advanced Integration Modules	Data compression AIM (up to 8.192 Mbps)	All Cisco 2600 series routers

1 The voice/fax and ATM-25 network modules require Cisco IOS Plus feature sets.
2 The 1- or 2-port 10/100 Ethernet LAN interface for the Cisco 2620 and Cisco 2621 routers is only available in Cisco IOS Release 12.0 2XC, 12.03T, and later 12.0T releases.
3 Requires the Cisco IOS Plus feature sets.
4 See E1/T1 multiflex voice/WAN interface cards in this table.
5 See E1/T1 multiflex voice/WAN interface cards in this table
6 See E1/T1 multiflex voice/WAN interface cards in this table.
7 See E1/T1 multiflex voice/WAN interface cards in this table.
8 Requires the NM-1V or NM-2V network module.

Software Compatibility

The feature packs described in these release notes contain Cisco IOS Release 12.0(7)XK1 software images, some earlier images, and RSL Version 7.6. Before running RSL, read the "Installing Software Images Using RSL" section on page 17.

Determining Your Software Release

To determine the version of Cisco IOS software that is currently running on your Cisco 2600 series router, enter the **show version** command. The version number is indicated on the second line:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 2600 Software (C2600-i-mz), Version 12.0(5)T1, RELEASE SOFTWARE
```

The output includes further information such as processor revision numbers, memory amounts, hardware IDs, and partition information.

Updating to a New Software Release

For information about upgrading to a new software release, see the *Cisco IOS Software Release 12.0 T Upgrade (#819: 1/99)* product bulletin located on CCO at:

Service and Support > Product Bulletins > Software

Under **Cisco IOS 12.0**, click **Cisco IOS Software Release 12.0 T Upgrade (#819: 1/99)**.

This product bulletin does not contain information specific to Cisco IOS Release 12.0(7)XK1, but provides general upgrade information that may apply to this release.

Product Number Quick-Reference List

Table 3 lists Cisco product numbers for the feature packs supported in this release.

Table 3 Feature Pack Product Numbers

Product Number	Feature Pack Description
CD26-C-12.0.7=	Cisco 2600 IP Feature Pack
CD26-CH-12.0.7=	Cisco 2600 IP/FW[1] Feature Pack
CD26-CP-12.0.7=	Cisco 2600 IP Plus Feature Pack
CD26-CHL-12.0.7=	Cisco 2600 IP/FW Plus IPSec 56 Feature Pack[1 2]
CD26-CK2-12.0.7=	Cisco 2600 IP Plus IPSec 3DES Feature Pack[1 2]
CD26-CHK2-12.0.7=	Cisco 2600 IP/FW Plus IPSec 3DES Feature Pack[1 2]
CD26-CL-12.0.7=	Cisco 2600 IP Plus IPSec 56 Feature Pack[2]
CD26-B-12.0.7=	Cisco 2600 IP/IPX/AT/DEC Feature Pack
CD26-BP-12.0.7=	Cisco 2600 IP/IPX/AT/DEC Plus Feature Pack
CD26-BHP-12.0.7=	Cisco 2600 IP/IPX/AT/DEC/FW Plus Feature Pack[1]
CD26-AP-12.0.7=	Cisco 2600 Enterprise Plus Feature Pack
CD26-AL-12.0.7=	Cisco 2600 Enterprise Plus IPSec 56 Feature Pack[2]
CD26-AHK2-12.0.7=	Cisco 2600 Enterprise/FW Plus IPSec 3DES Feature Pack[1 2]

Table 3 Feature Pack Product Numbers (continued)

Product Number	Feature Pack Description
CD26-AK2-12.0.7=	Cisco 2600 Enterprise Plus IPSec 3DES Feature Pack[1 2]
CD26-AHL-12.0.7=	Cisco 2600 Enterprise/FW Plus IPSec 56 Feature Pack[1 2]
CD26-E-12.0.7=	Cisco 2600 Remote Access Server Feature Pack

1 FW means firewall.
2 This feature pack contains encryption images.

Feature Pack Overview

Table 4 identifies each feature pack by product number, CD-ROM label, UNIX and DOS filenames of the images, memory requirements, and RSL installer descriptions.

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-C-12.0.7=	Cisco 2600 IP Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-i-mz.120-7.XK1	aaa1308	8 MB	24 MB	Cisco 2600 IOS IP Feature Set 12.0(7)XK1
		c2600-i-mz.120-7.T	aaa1309	4 MB	20 MB	Cisco 2600 IOS IP Feature Set 12.0(7)T
		c2600-i-mz.120-8	aaa1310	4 MB	20 MB	Cisco 2600 IOS IP Feature Set 12.0(8)
		c2600-i-mz.120-5.XK1	aaa1311	8 MB	20 MB	Cisco 2600 IOS IP Feature Set 12.0(5)XK1
		c2600-i-mz.120-5	aaa1312	4 MB	16 MB	Cisco 2600 IOS IP Feature Set 12.0(5)
CD26-CH-12.0.7=	Cisco 2600 IP/FW Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-io3-mz.120-7.XK1	aaa1313	8 MB	32 MB	Cisco 2600 IOS IP/FW Feature Set 12.0(7)XK1
		c2600-io3-mz.120-7.T	aaa1314	8 MB	24 MB	Cisco 2600 IOS IP/FW Feature Set 12.0(7)T
		c2600-io3-mz.120-5.XK1	aaa1315	8 MB	24 MB	Cisco 2600 IOS IP/FW Feature Set 12.0(5)XK1

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements (continued)

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-CP-12.0.7=	Cisco 2600 IP Plus Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-is-mz.120-7.XK1	aaa1316	16 MB	40 MB	Cisco 2600 IOS IP Plus Feature Set 12.0(7)XK1
		c2600-is-mz.120-7.T	aaa1317	8 MB	32 MB	Cisco 2600 IOS IP Plus Feature Set 12.0(7)T
		c2600-is-mz.120-8	aaa1318	8 MB	24 MB	Cisco 2600 IOS IP Plus Feature Set 12.0(8)
		c2600-is-mz.120-5.XK1	aaa1319	8 MB	32 MB	Cisco 2600 IOS IP Plus Feature Set 12.0(5)XK1
		c2600-is-mz.120-5	aaa1320	8 MB	24 MB	Cisco 2600 IOS IP Plus Feature Set 12.0(5)
CD26-CHL-12.0.7=	Cisco 2600 IP/FW Plus IPSec 56 Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-io3s56i-mz.120-7.XK1	aaa1321	16 MB	48 MB	Cisco 2600 IOS IP/FW Plus IPSec 56 Feature Set 12.0(7)XK1
		c2600-io3s56i-mz.120-7.T	aaa1322	16 MB	32 MB	Cisco 2600 IOS IP/FW Plus IPSec 56 Feature Set 12.0(7)T
		c2600-io3s56i-mz.120-5.XK1	aaa1323	8 MB	32 MB	Cisco 2600 IOS IP/FW Plus IPSec 56 Feature Set 12.0(5)XK1
CD26-CK2-12.0.7=	Cisco 2600 IP Plus IPSec 3DES Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-ik2s-mz.120-7.XK1	aaa1324	16 MB	48 MB	Cisco 2600 IOS IP Plus IPSec 3DES Feature Set 12.0(7)XK1
		c2600-ik2s-mz.120-7.T	aaa1325	8 MB	40 MB	Cisco 2600 IOS IP Plus IPSec 3DES Feature Set 12.0(7)T
		c2600-ik2s-mz.120-5.XK1	aaa1326	8 MB	32 MB	Cisco 2600 IOS IP Plus IPSec 3DES Feature Set 12.0(5)XK1
CD26-CHK2-12.0.7=	Cisco 2600 IP/FW Plus IPSec 3DES Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-ik2o3s-mz.120-7.XK1	aaa1327	16 MB	48 MB	Cisco 2600 IOS IP/FW Plus IPSec 3DES Feature Set 12.0(7)XK1
		c2600-ik2o3s-mz.120-7.T	aaa1328	16 MB	40 MB	Cisco 2600 IOS IP/FW Plus IPSec 3DES Feature Set 12.0(7)T
		c2600-ik2o3s-mz.120-5.XK1	aaa1329	8 MB	32 MB	Cisco 2600 IOS IP/FW Plus IPSec 3DES Feature Set 12.0(5)XK1

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements (continued)

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-CL-12.0.7=	Cisco 2600 IP Plus IPSec 56 Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-is56i-mz.120-7.XK1	aaa1330	16 MB	40 MB	Cisco 2600 IOS IP Plus IPSec 56 Feature Set 12.0(7)XK1
		c2600-is56i-mz-120-7.T	aaa1331	8 MB	40 MB	Cisco 2600 IOS IP Plus IPSec 56 Feature Set 12.0(7)T
		c2600-is56i-mz.120-8	aaa1332	8 MB	32 MB	Cisco 2600 IOS IP Plus IPSec 56 Feature Set 12.0(8)
		c2600-is56i-mz-120-5.XK1	aaa1333	8 MB	32 MB	Cisco 2600 IOS IP Plus IPSec 56 Feature Set 12.0(5)XK1
		c2600-is56i-mz-120-5	aaa1334	8 MB	24 MB	Cisco 2600 IOS IP Plus IPSec 56 Feature Set 12.0(5)
CD26-B-12.0.7=	Cisco 2600 IP/IPX/AT/DEC Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-d-mz.120-7.XK1	aaa1335	8 MB	32 MB	Cisco 2600 IOS IP/IPX/AT Feature Set 12.0(7)XK1
		c2600-d-mz-120-7.T	aaa1336	8 MB	24 MB	Cisco 2600 IOS IP/IPX/AT Feature Set 12.0(7)T
		c2600-d-mz.120-8	aaa1337	8 MB	20 MB	Cisco 2600 IOS IP/IPX/AT Feature Set 12.0(8)
		c2600-d-mz-120-5.XK1	aaa1338	8 MB	24 MB	Cisco 2600 IOS IP/IPX/AT Feature Set 12.0(5)XK1
		c2600-d-mz-120-5	aaa1339	4 MB	20 MB	Cisco 2600 IOS IP/IPX/AT Feature Set 12.0(5)
CD26-BP-12.0.7=	Cisco 2600 IP/IPX/AT/DEC Plus Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-ds-mz.120-7.XK1	aaa1340	16 MB	40 MB	Cisco 2600 IOS IP/IPX/AT Plus Feature Set 12.0(7)XK1
		c2600-ds-mz.120-7.T	aaa1341	8 MB	40 MB	Cisco 2600 IOS IP/IPX/AT Plus Feature Set 12.0(7)T
		c2600-ds-mz.120-8	aaa1342	8 MB	24 MB	Cisco 2600 IOS IP/IPX/AT Plus Feature Set 12.0(8)
		c2600-ds-mz.120-5.XK1	aaa1343	8 MB	32 MB	Cisco 2600 IOS IP/IPX/AT Plus Feature Set 12.0(5)XK1
		c2600-ds-mz.120-5	aaa1344	8 MB	24 MB	Cisco 2600 IOS IP/IPX/AT Plus Feature Set 12.0(5)

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements (continued)

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-BHP-12.0.7=	Cisco 2600 IP/IPX/AT/DEC/ FW Plus Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-do3s-mz.120-7.XK1	aaa1345	16 MB	48 MB	Cisco 2600 IOS IP/IPX/AT/FW Plus Feature Set 12.0(7)XK1
		c2600-do3s-mz.120-7.T	aaa1346	16 MB	40 MB	Cisco 2600 IOS IP/IPX/AT/FW Plus Feature Set 12.0(7)T
		c2600-do3s-mz.120-5.XK1	aaa1347	8 MB	32 MB	Cisco 2600 IOS IP/IPX/AT/FW Plus Feature Set 12.0(5)XK1
CD26-AP-12.0.7=	Cisco 2600 Enterprise Plus Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-js-mz.120-7.XK1	aaa1348	16 MB	48 MB	Cisco 2600 IOS Enterprise Plus Feature Set 12.0(7)XK1
		c2600-js-mz.120-7.T	aaa1349	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus Feature Set 12.0(7)T
		c2600-js-mz.120-8	aaa1350	8 MB	24 MB	Cisco 2600 IOS Enterprise Plus Feature Set 12.0(8)
		c2600-js-mz.120-5.XK1	aaa1351	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus Feature Set 12.0(5)XK1
		c2600-js-mz.120-5	aaa1352	8 MB	24 MB	Cisco 2600 IOS Enterprise Plus Feature Set 12.0(5)
CD26-AL-12.0.7=	Cisco 2600 Enterprise Plus IPSec 56 Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-js56i-mz.120-7.XK1	aaa1353	16 MB	48 MB	Cisco 2600 IOS Enterprise Plus IPSec 56 Feature Set 12.0(7)XK1
		c2600-js56i-mz.120-7.T	aaa1354	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus IPSec 56 Feature Set 12.0(7)
		c2600-js56i-mz.120-8	aaa1355	8 MB	32 MB	Cisco 2600 IOS Enterprise Plus IPSec 56 Feature Set 12.0(8)
		c2600-js56i-mz.120-5.XK1	aaa1356	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus IPSec 56 Feature Set 12.0(5)XK1
		c2600-js56i-mz.120-5	aaa1357	8 MB	32 MB	Cisco 2600 IOS Enterprise Plus IPSec 56 Feature Set 12.0(5)

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements (continued)

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-AHK2-12.0.7=	Cisco 2600 Enterprise/FW Plus IPSec 3DES Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-jk2o3s-mz.120-7.XK1	aaa1358	16 MB	48 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 3DES Feature Set 12.0(7)XK1
		c2600-jk2o3s-mz.120-7.T	aaa1359	16 MB	40 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 3DES Feature Set 12.0(7)T
		c2600-jk2o3s-mz.120-5.XK1	aaa1360	16 MB	40 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 3DES Feature Set 12.0(5)XK1
CD26-AK2-12.0.7=	Cisco 2600 Enterprise Plus IPSec 3DES Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-jk2s-mz.120-7.XK1	aaa1361	16 MB	48 MB	Cisco 2600 IOS Enterprise Plus IPSec 3DES Feature Set 12.0(7)XK1
		c2600-jk2s-mz.120-7.T	aaa1362	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus IPSec 3DES Feature Set 12.0(7)T
		c2600-jk2s-mz.120-5.XK1	aaa1363	16 MB	40 MB	Cisco 2600 IOS Enterprise Plus IPSec 3DES Feature Set 12.0(5)XK1
CD26-AHL-12.0.7=	Cisco 2600 Enterprise/FW Plus IPSec 56 Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-jo3s56i-mz.120-7.XK1	aaa1364	16 MB	48 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 56 Feature Set 12.0(7)XK1
		c2600-jo3s56i-mz.120-7.T	aaa1365	16 MB	40 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 56 Feature Set 12.0(7)T
		c2600-jo3s56i-mz.120-5.XK1	aaa1366	16 MB	40 MB	Cisco 2600 IOS Enterprise/FW Plus IPSec 56 Feature Set 12.0(5)XK1

Table 4 Cisco 2600 Series Feature Pack Image Filenames and Memory Requirements (continued)

Product Number	CD-ROM Title	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required	RSL Installer Description
CD26-E-12.0.7=	Cisco 2600 Remote Access Server Feature Pack Release 12.0(7)XK1 RSL Version 7.6	c2600-c-mz.120-7.XK1	aaa1367	8 MB	24 MB	Cisco 2600 IOS Remote Access Server Feature Set 12.0(7)XK1
		c2600-c-mz.120-7.T	aaa1368	8 MB	20 MB	Cisco 2600 IOS Remote Access Server Feature Set 12.0(7)
		c2600-c-mz.120-8	aaa1369	4 MB	20 MB	Cisco 2600 IOS Remote Access Server Feature Set 12.0(8)
		c2600-c-mz.120-5.XK1	aaa1370	8 MB	20 MB	Cisco 2600 IOS Remote Access Server Feature Set 12.0(5)XK1
		c2600-c-mz.120-5	aaa1371	4 MB	16 MB	Cisco 2600 IOS Remote Access Server Feature Set 12.0(5)

Features by Feature Set

Cisco IOS software is packaged as feature sets (or images), each containing a subset of Cisco IOS features. Some feature sets are identified by the following conventions:

- Plus—Value-added feature set with additional features.
- Plus 56—Value-added feature set with additional features, including 56-bit data encryption.

Caution Cisco IOS images with strong encryption (including, but not limited to, 56-bit and 168-bit DES) are subject to U.S. government export controls and have a limited distribution. Images to be installed outside the U.S. require an export license. Customer orders might be denied or subject to delay due to U.S. government regulations. Contact your sales representative or distributor for more information, or send e-mail to export@cisco.com.

Table 5 and Table 6 list features supported by Cisco 2600 series routers in each Cisco IOS Release 12.0(7)XK1 feature set:

- Table 5: IP and IP/IPX/AppleTalk/DEC feature sets
- Table 6: Enterprise and Enterprise Plus feature sets

The tables use the following conventions:

- Yes—The feature is supported in the feature set.
- No—The feature is not supported in the feature set.
- First—The Cisco IOS release that introduced the feature. For example, (1) means the feature was introduced in 12.0(1)T.

Note These tables list only selected features. They are not complete lists of all features in each image.

Table 5 Features by Feature Set for Cisco 2600 Series, Part 1 of 2

Feature	First	Feature Set									
		IP	IP Plus	IP Plus IPSec 3DES	IP Plus IPSec 56	IP FW	IP FW Plus IPSec 3DES	IP FW Plus IPSec 56	IP IPX AT DEC	IP IPX AT DEC Plus	IP IPX AT DEC FW Plus
New Features in 12.0(7)XK											
Voice over Frame Relay Enhancements	(7)XK	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Voice Port Enhancements	(7)XK	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Voice Port Testing	(7)XK	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Q.SIG	(7)XK	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Connectivity											
Layer 2 Tunnel Protocol (L2TP)	(1)	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
RIP Enhancements	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP version 3	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IBM Support											
DLSw+ RSVP	(3)	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
DLSw+ Enhanced Load Balancing	(3)	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
DLSw+ Peer Clusters	(3)	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Token Ring Interswitch Link	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing											
Easy IP Phase 2- DHCP Server	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flow Random Early Detection	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OSPF Packet Pacing	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OS_IFSS	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Response Time Reporter Enhancements	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Service Provider 1	(3)	No	No	No	No	No	No	No	No	No	No
NetFlow Policy Infrastructure	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Web Cache Communications Protocol V2 (WCCPv2)	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management											
1FE2P Network Module[1]	(1)	No	No	No	No	No	No	No	No	No	No
ISDN MIB RFC 2127	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Process MIB	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quality of Service											
CLI String Search	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security											
Cisco IOS Firewall Feature Set Platform Support	(1)	No	No	No	No	Yes	Yes	Yes	No	No	Yes
IPSec Triple DES	(2)	No	No	Yes	No	No	Yes	No	No	No	No

Table 5 Features by Feature Set for Cisco 2600 Series, Part 1 of 2 (continued)

Feature	First	Feature Set									
		IP	IP Plus	IP Plus IPSec 3DES	IP Plus IPSec 56	IP FW	IP FW Plus IPSec 3DES	IP FW Plus IPSec 56	IP IPX AT DEC	IP IPX AT DEC FW Plus	IP IPX AT DEC FW Plus
Switching											
Cisco IOS STP Enhancements	(1)	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Voice											
BRI Voice over IP: VIC-2BRI-S/T-TE[1]	(3)	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Voice over Frame Relay, FRF.11 and FRF.12	(4)	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
WAN Services											
Digital T1 Packet Voice Trunk Network Modules	(5)XK	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Multiport T1/E1 ATM Network Modules with Inverse Multiplexing over ATM	(5)XK	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Annex-G (X.25 over Frame Relay)	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATM OC3 NM	(3)	No	No	No	No	No	No	No	No	No	No
IOS IEEE 802.1Q Support	(1)	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
ISDN Dynamic Multiple Encaps for Dial-in	(4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN LAPB-TA	(4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mobile IP	(1)	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Modem over ISDN BRI[2]	(3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PPP over Frame Relay	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2 Signaling	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-Based Access Lists	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 over ISDN D Channel	(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 Load Balancing	(3)	No	No	No	No	No	No	No	No	No	No

1 Cisco 3620 and 3640 routers only.
2 Cisco 3640 routers only.

Table 6 Features by Feature Set for Cisco 2600 Series, Part 2 of 2

Feature	First	Feature Set				
		Enterprise Plus	Enterprise Plus IPSec 56	Enterprise FW Plus IPSec 56	Enterprise Plus IPSec 3DES[1]	Enterprise FW Plus IPSec 3DES[2]
New Features in 12.0(7)XK						
Voice over Frame Relay Enhancements	(7)XK	Yes	Yes	Yes	Yes	Yes
Voice Port Enhancements	(7)XK	No	Yes	No	Yes	Yes
Voice Port Testing	(7)XK	Yes	Yes	Yes	Yes	Yes
Q.SIG	(7)XK	Yes	Yes	No	Yes	Yes
IBM Support						
DLSw+ RSVP	(3)	Yes	Yes	Yes	Yes	Yes
DLSw+ Enhanced Load Balancing	(3)	Yes	Yes	Yes	Yes	Yes
DLSw+ Peer Clusters	(3)	Yes	Yes	Yes	Yes	Yes
Token Ring Interswitch Link	(3)	Yes	Yes	Yes	Yes	Yes
IP Routing						
Easy IP Phase 2-DHCP Server	(1)	Yes	Yes	Yes	Yes	Yes
Flow Random Early Detection	(3)	Yes	Yes	Yes	Yes	Yes
NetFlow Policy Infrastructure	(3)	Yes	Yes	Yes	Yes	Yes
OSPF Packet Pacing	(1)	Yes	Yes	Yes	Yes	Yes
OS_IFSS	(1)	Yes	Yes	Yes	Yes	Yes
Response Time Reporter Enhancements	(3)	Yes	Yes	Yes	Yes	Yes
Service Provider 1	(3)	No	No	No	No	No
Web Cache Communications Protocol V2 (WCCPv2)	(3)	Yes	Yes	Yes	Yes	Yes
Management						
ISDN MIB RFC 2127	(1)	Yes	Yes	Yes	Yes	Yes
1FE2P Network Module[2]	(1)	No	No	No	No	No
Process MIB	(3)	Yes	Yes	Yes	Yes	Yes
Quality of Service						
CLI String Search	(1)	Yes	Yes	Yes	Yes	Yes
Security						
Cisco IOS Firewall Feature Set Platform Support	(1)	No	No	Yes	No	Yes
IPSec Triple DES	(2)	No	No	No	Yes	Yes
Switching						
Cisco IOS STP Enhancements	(1)	Yes	Yes	Yes	Yes	Yes

Table 6 Features by Feature Set for Cisco 2600 Series, Part 2 of 2 (continued)

Feature	First	Feature Set				
		Enterprise Plus	Enterprise Plus IPSec 56	Enterprise FW Plus IPSec 56	Enterprise Plus IPSec 3DES[1]	Enterprise FW Plus IPSec 3DES[2]
Voice						
BRI Voice over IP: VIC-2BRI-S/T-TE[2]	(3)	Yes	Yes	Yes	Yes	Yes
Voice Over Frame Relay, FRF.11 and FRF.12	(4)	Yes	Yes	Yes	Yes	Yes
WAN Services						
Multiport T1/E1 ATM Network Modules with Inverse Multiplexing over ATM	(5)XK	Yes	Yes	Yes	Yes	Yes
Digital T1 Packet Voice Trunk Network modules	(5)XK	Yes	Yes	Yes	Yes	Yes
Annex-G (X.25 over Frame Relay)	(3)	Yes	Yes	Yes	Yes	Yes
ATM OC3 NM	(3)	No	No	No	No	No
Cisco IOS IEEE 802.1Q Support	(1)	Yes	Yes	Yes	Yes	Yes
ISDN Dynamic Multiple Encaps for Dial-in	(4)	Yes	Yes	Yes	Yes	Yes
ISDN LAPB-TA	(4)	Yes	Yes	Yes	Yes	Yes
Mobile IP	(1)	Yes	Yes	Yes	Yes	Yes
Modem over ISDN BRI[3]	(3)	Yes	Yes	Yes	Yes	Yes
PPP Over Frame Relay	(1)	Yes	Yes	Yes	Yes	Yes
R2 Signaling	(1)	Yes	Yes	Yes	Yes	Yes
Time-Based Access Lists	(1)	Yes	Yes	Yes	Yes	Yes
X.25 Load Balancing	(3)	Yes	Yes	Yes	Yes	Yes
X.25 over ISDN D Channel	(1)	Yes	Yes	Yes	Yes	Yes

1 This image was introduced in Cisco IOS Release 12.0(2)T.
2 Cisco 3620 and 3640 routers only.
3 Cisco 3640 routers only.

Installation Notes

This section describes the following topics:

- Installing Software Images Using RSL, page 17
- Alternatives to RSL, page 18

Installing Software Images Using RSL

This section describes some solutions to problems you might encounter when installing software images using the RSL. These solutions are additions to the RSL online help.

Recovering From a Connection Error

This installation tip provides a possible recovery solution if you are unable to connect to your access server or router. You can skip this section unless you are experiencing a connection error.

In some cases, you might receive the following error message while connecting to the target access server:

```
"Failed to configure the router to enable the Cisco IOS software image and
configuration file upload and download operations. You may want to check the router to
make sure that the selected interface exists."
```

If you encounter this message, especially if one of the following situations applies, try increasing the Short Timeout value higher than 25 seconds in the Options dialog box:

- You are connecting to an access server that has a large configuration file.
- You are connecting to a Cisco AS5200 access server. A Cisco AS5200 requires up to 45 seconds to write a configuration to nonvolatile random-access memory (NVRAM), due to the amount of interfaces that must be checked during this process. Increase the Short Timeout value to 60 seconds.

Note Increasing the Short Timeout value might increase the time it takes for RSL to connect to the target access server.

Restoring the Startup Configuration

In some cases, the RSL is unable to restore the startup configuration. If this happens, take the following steps:

Step 1 Ensure that all cables are properly attached to both the router and the PC.

Step 2 Restart the RSL, and connect by using the **Preconfigured router** option.

Step 3 When asked if you want to overwrite the existing startup configuration file, choose **no**.

Step 4 When asked if you want to continue, choose **yes**.

Step 5 When the router is connected, select **Download Router Configuration** in the Router Software Loader dialog box.

Step 6 Select the appropriate file, and click the radio button beside **Copy configuration to the router nonvolatile memory**.

The router should now contain the startup configuration it had before the initial RSL connection. You can now exit the RSL.

Note In the previous situation, the router configuration register (**config-register 0x***nnnn*) is not restored.

Note If you press **Ctrl-Alt-Delete** to terminate the RSL, the router configuration and configuration register are not restored. However, in this case, the configuration file is not deleted from the PC, so you can restore it using the previous steps, beginning with Step 2.

Installation Tips

The following information about RSL operations can help you with the installation process:

- If you have added any static entries to the PC Address Resolution Protocol (ARP) table, one or more of them might be deleted by the RSL. You need to manually re-enter any deleted entries in the PC ARP table.
- If the router's running configuration at connection time is not the same as its startup configuration, the exact configuration is not restored. Any changes that you have made since the last time a **copy running-config startup-config** or **write memory** command was entered are lost.
- The RSL restores the router's startup configuration, but some running configuration commands are not restored. To restore the exact running configuration, reboot the router. The following interface configuration commands are not restored to the running configuration: **no shutdown**, **no ringspeed**, and **media-type aui**.

Alternatives to RSL

RSL is designed to work with a PC running Microsoft Windows 95 and is the recommended method for downloading software to the router. The booklet included with the CD-ROM explains how to perform this simple install process; however, two alternatives are available for installing router software:

- Using the console or auxiliary port
- Using a TFTP server application

Installing the Router Software Using the Console or Auxiliary Port

This section explains how to use the **copy xmodem flash** command to install the router software from the CD-ROM onto the router.

Note The transfer takes place only on the port at which you enter the command. If you download via the console, all console output is discarded for the duration of the transfer. You can only download files to the router; you cannot copy files from the router. Cisco recommends using the auxiliary port for this type of software download. The auxiliary port has hardware flow control and full modem control. In addition, the transfer does not occupy the system console so it is free for other uses.

The following example shows how to use the **copy xmodem flash** command on a Cisco 2600 series router.

```
Router# copy xmodem flash
                              **** WARNING ****
        x/ymodem is a slow transfer protocol limited to the current speed
        settings of the auxiliary/console ports. The use of the auxiliary
        port for this download is strongly recommended.
        During the course of the download no exec input/output will be
        available.
                              ---- ******* ----
        Proceed? [confirm] yes
        Use crc block checksumming? [confirm] yes
        Max Retry Count [10]:
        Perform image validation checks? [confirm] yes
        Xmodem download using crc checksumming with image validation
        Continue? [confirm] yes
        Partition   Size    Used      Free      Bank-Size  State          Copy Mode
          1         4096K   3259K      836K     4096K      Read/Write     Direct
          2         4096K      0K     4095K     4096K      Read/Write     Direct

        [Type ?<no> for partition directory; ? for full directory; q to abort]
        Which partition? [default = 1] 2

        System flash directory, partition 2:
        File  Length   Name/status
          1   68       TESTFILE
        [132 bytes used, 4194172 available, 4194304 total]
        Destination file name? c3620-i-mz.0918
        Erase flash device before writing? [confirm] yes
        Flash contains files. Are you sure you want to erase? [confirm]y

        Copy '' from server
          as 'c3620-i-mz.0918' into Flash WITH erase? [yes/no] yes
        Erasing device... eeeeeeeeeeeeeee ...erased
        Ready to receive file..........C
        Verifying checksum...  OK (0x5DE8)
        Flash device copy took 00:12:06 [hh:mm:ss]
```

Installing the Router Software Using a TFTP Server Application

Use this TFTP server application method as an alternative to using the RSL to install the router software from the CD-ROM. You can perform this procedure using a PC (running Microsoft Windows 95 or Microsoft Windows 3.1), a Macintosh, or a UNIX system. You can use either the **copy tftp flash** or **copy rcp flash** command to download the router software to the router.

First, obtain a TFTP application or a remote copy protocol (rcp) application to set up your computer as a TFTP server or a rcp server. Only use the RSL or the TFTP server included on the feature pack CD-ROM to install the router software if you are using a PC running Windows 95. For other operating systems, a number of TFTP or rcp applications are available from independent software vendors or available as shareware from public sources on the World Wide Web.

Note To use an rcp application, follow the procedure below, substituting "rcp" for "TFTP"and using the **copy rcp flash** command instead of the **copy tftp flash** command.

Step 1 Install any TFTP server application on the PC. (A PC application is included on the feature pack CD-ROM for Microsoft Windows 95 only.)

Step 2 Launch the TFTP server application on the PC, usually by double-clicking the application icon or its .exe filename.

Step 3 Set up the PC as a TFTP server by using the TFTP server application setup or configuration facility.

Most TFTP server applications include a setup facility that allows you to specify the PC as a server. For example, from the TFTP menu of one application, you can select **Settings** to display a panel, and configure the local PC as a server by selecting the Server checkbox.

The TFTP server also allows the selection of a "root" directory. You must select the directory in which the Cisco IOS files reside (for example, d:\cpswinst\images).

Caution Make sure you set up your local PC as a TFTP server. If you overlook this step, you cannot perform the copy procedure. This reminder applies to both TFTP and rcp.

Step 4 Establish a console session from your local PC (which is now configured as a TFTP server) to the Cisco router by using one of these methods:

- Connect the PC com port to the router console port.

  This is the recommended method.When you reload the router with the new image in Step 25, you remain connected to the router. (If you use Telnet, you lose connection to the router.)

- Establish a Telnet session from the PC to the router.

Caution Make sure your PC is set up to communicate with the 10BaseT Ethernet port on the router.

Step 5 Connect your PC Ethernet port to the corresponding router LAN port. Use the 10BaseT crossover cable to connect to an Ethernet port. Use straight-through cables if you are connecting via a 10BaseT hub or a 100BaseT hub.

Note We recommend that you back up the router configuration before upgrading the router software.

Step 6 Enter the following commands to set the configuration register to 0x2101 and reload to the bootstrap image:

```
Router# config terminal
Router(config)# config-reg 0x2101
Router(config)# end
Router# reload
```

Step 7 When asked whether the system configuration has been modified, enter **yes**:

```
# System configuration has been modified. Save? yes
```

Step 8 If the password prompt appears, enter the password.

```
Password: <password>
```

Step 9 At the router prompt, enter **enable** and then the password:

```
Router(boot)> enable
Password: <password>
```

Step 10 If you are *not* upgrading a CiscoPro CPA1600 router, skip to Step 19.

Step 11 At the router prompt, enter the following command to copy the router upgrade utility from the PC CD-ROM drive to the router:

```
Router(boot)# copy tftp flash
```

Note If you are using rcp, enter **copy rcp flash** instead.

Step 12 When prompted, enter the IP address of your PC, as in the following example:

```
Address or name of remote host [255.255.255.255]? 172.11.1.1
```

This is the IP address of your local PC, not the router. (Note that you can obtain your PC IP address from the DOS prompt in the windows directory by entering **winipcfg**, as follows: `C:\WINDOWS> winipcfg`.)

Step 13 When prompted, enter the filename of the image to be copied to the router as in the following example:

```
Source file name? cpa1600-upgrade-l.112-3.P
```

Note The upgrade image file on the Feature Pack CD has a long filename (cpa1600-upgrade-l.112-3.P); note that DOS displays it in 8.3 format as cpa1600~1.P. The upgrade utility is a special file, not a Cisco IOS run-time image.

Step 14 In response to the following prompt, enter the destination filename, and press **Enter**.

```
Destination file name [cpa1600-upgrade-l.112-3.P]?
cpa1600-upgrade-l.112-3.P
```

(This is the name of the image file on the router, not the full pathname of the image on the PC CD-ROM.)

During the transfer process, messages indicate that the software has accessed the file you have specified and is loading it.

If the file is not found, check the following:

- The filename is correct.
- The TFTP server is enabled.
- The correct root directory is selected.
- There is IP connectivity between the router and TFTP server.

If the file is still not found, create a temporary directory entitled "C:\temp," and copy the CiscoPro upgrade file into the directory. Select the C:\temp directory as the root directory.

Step 15 When asked whether you want to erase the existing image in the router Flash memory before copying the new one, enter **yes**:

```
Erase flash device before writing? [confirm] yes
```

The entire copying process takes several minutes and differs from network to network. The exclamation point (!) indicates that the copy process is taking place. Each exclamation point indicates that ten packets have been transferred successfully. If you see three or more periods (...), the transfer might fail. If the transfer fails, use the **ping** command to check IP connectivity between the router and TFTP server.

Step 16 Enter the **reload** command to reload the router:

```
Router(boot)# reload
```

Do not save the configuration.

After reload is complete, your CiscoPro router has been upgraded to a Cisco Enterprise router. Because the original Cisco IOS image that resided in Flash memory was erased during the upgrade process, the router is now running in bootstrap mode.

Step 17 If the password prompt appears, enter the password.

```
Password: <password>
```

Step 18 At the router prompt, enter **enable** and then the password:

```
Router(boot)# enable
Password: <password>
```

Step 19 At the router prompt, enter the following command to copy the new software image from the PC CD-ROM drive to the router:

```
Router(boot)(config)# copy tftp flash
```

In the next series of steps, you download the Cisco IOS Release 12.0(7)XK1 images that you want installed on your router.

Step 20 When prompted, enter the IP address of your PC, as in the following example:

```
Address or name of remote host [255.255.255.255]? 172.11.1.1
```

This is the IP address of your local PC, not that of the router.

Step 21 When prompted, enter the filename of the Cisco IOS Release 12.0(7)XK1 image to be copied to the router, as in the following example:

```
Source file name? aaa1308.bin
```

This example specifies the DOS image name of the IP feature set for Cisco 2600 series routers (as shown in Table 4 in the "Feature Pack Overview" section on page 7).

Step 22 In response to the prompt, enter the destination UNIX image filename, and press **Enter**.

This is the name of the image file on the router, not the full pathname of the image on the CD-ROM attached to the PC. Refer to Table 4 in the "Feature Pack Overview" section on page 7 for the UNIX image filename.

```
Destination file name [aaa01308.bin]? c2600-i-mz.120-7.XK1
```

During the transfer process, the software displays messages indicating that it has accessed the file you have specified and is loading it.

Step 23 Enter **yes** in response to the prompt asking if you want to erase the existing image copy resident in the router Flash memory before copying the new one.

```
Erase flash device before writing? [confirm] yes
```

The entire copying process takes several minutes and differs from network to network.

The exclamation point (!) indicates that the copy process is taking place. Each exclamation point (!) indicates that ten packets have been transferred successfully. A checksum verification of the image occurs after the image is written to Flash memory.

Step 24 Enter the following commands to reset the configuration register to 0x2102.

```
Router(boot)(config)# config terminal
Router(boot)(config)# config-reg 0x2102
Router(boot)(config)# end
```

Step 25 Enter the **reload** command to reload the router:

```
Router# reload
```

After reload is complete, the router should be running the required Cisco IOS image. Use the **show version** command to verify.

Related Documentation

This section describes documentation related to the Cisco 2600 series, typically including hardware installation guides, software installation guides, Cisco IOS configuration and command references, system error messages, and feature modules that are updates to the Cisco IOS documentation set. Documentation is available as printed manuals or electronic documents, except for the feature modules, which are available online only.

The most up-to-date documentation can be found on the Web via Cisco Connection Online (CCO) and on the latest Documentation CD-ROM. These electronic documents might contain updates and modifications made after the paper documents were printed. See the “Obtaining Documentation” section on page 29 for more information.

This section contains the following subsections:

- Release-Specific Documents, page 24
- Platform-Specific Documents, page 25
- Feature Modules, page 25
- Cisco IOS Documentation Set, page 26

Release-Specific Documents

The following documents are specific to Cisco IOS Releases 12.0 T and 12.0, on which Release 12.0(7)XK1 is based. They are located on CCO and the Documentation CD-ROM:

- *Release Notes for Cisco IOS Release 12.0 T*

  To access the cross-platform *Release Notes for Cisco IOS Release 12.0 T* on CCO, follow this path:

  Service and Support > Technical Documents > Documentation Home Page > Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Release Notes > Cross-Platform Release Notes for Cisco IOS Release 12.0 T

  To access the cross-platform *Release Notes for Cisco IOS Release 12.0 T* on the Documentation CD-ROM, follow this path:

  Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Release Notes > Cross-Platform Release Notes for Cisco IOS Release 12.0 T

- Product bulletins, field notices, and other release-specific documents

  To access these documents, refer to the Software Center at this path on CCO:

  Service & Support > Technical Documents

- Caveat documents

  For caveat details, see the *Caveats for Cisco IOS Release 12.0 T* document, which contains caveats applicable to all platforms for all maintenance releases of Release 12.0 T.

  To access the caveat document on CCO, follow this path:

  Service and Support > Technical Documents > Documentation Home Page > Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Release Notes > Caveats > Caveats for Cisco IOS Release 12.0 T

  To access the caveat document on the Documentation CD-ROM, follow this path:

  Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Release Notes > Caveats > Caveats for Cisco IOS Release 12.0 T

Note If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. Bug Navigator II can be found at http://www.cisco.com/support/bugtools, or from CCO, select **Service & Support > Online Technical Support > Software Bug Toolkit**.

Platform-Specific Documents

The documents listed below are available for the Cisco 2600. These documents are also available online at Cisco Connection Online (CCO) and on the Documentation CD-ROM.

- *Quick Start Guide Cisco 2600 Series Cabling and Setup*
- *Cisco 2600 Series Hardware Installation Guide*
- *Cisco Network Module Hardware Installation Guide*
- *Update to Network Module Hardware and Software Guides*
- *Cisco WAN Interface Cards Hardware Installation Guide*
- *Update to WAN Interface Cards Hardware Installation Guide*
- Cisco 2600 series configuration notes
- *Cisco Modular Access Router Cable Specifications*
- *Cisco Redundant Power Systems Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Cisco 2600 Series*
- *Software Configuration Guide for Cisco 3600 and Cisco 2600 Series Routers*
- *New and Changed Show Commands for Cisco 2600 Series Routers*
- *Release Notes for Digital Modem Portware*
- *Release Notes for Analog Modem Firmware*

To reach Cisco 2600 series documents on CCO, follow this path:

Service & Support > Documentation Home Page > Access Servers and Access Routers > **Modular Access Routers** > **Cisco 2600 Series Routers**

To reach Cisco 2600 series documents on the Documentation CD-ROM, follow this path:

Access Servers and Access Routers > **Modular Access Routers** > **Cisco 2600 Series Routers**

Feature Modules

Feature modules describe new features introduced in 12.0 T releases and are updates to the Cisco IOS documentation set. As updates, the features modules are available online only. The feature module information will be added to the Cisco IOS documentation set before the next printing. Feature modules have a brief overview of the feature, benefits, configuration tasks, and a command reference.

To access the feature modules on CCO, follow this path:

Service and Support > Technical Documents > Documentation Home Page > Cisco IOS Software Configuration > Cisco IOS Release 12.0 > New Feature Documentation

To access the feature modules on the documentation CD-ROM, follow this path:

Cisco IOS Software Configuration > Cisco IOS Release 12.0 > New Feature Documentation

Cisco IOS Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents, which are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

You can reach these documents on CCO at:

Service and Support > Technical Documents > Documentation Home Page > Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Cisco IOS Release 12.0 Configuration Guides and Command References

You can reach these documents on the Documentation CD-ROM at:

Cisco IOS Software Configuration > Cisco IOS Release 12.0 > Cisco IOS Release 12.0 Configuration Guides and Command References

Release 12.0 Documentation Set

Table 7 describes the contents of the Cisco IOS Release 12.0 software documentation set, which is available in electronic form and also in printed form upon request.

Note You can find the most current Cisco IOS documentation on CCO and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the paper documents were printed.

You can reach the Cisco IOS documentation set on CCO at:

Service and Support > Technical Documents > Documentation Home Page > Cisco IOS Software Configuration > Cisco IOS Release 12.0

You can reach the Cisco IOS documentation set on the Documentation CD-ROM at:

Cisco IOS Software Configuration > Cisco IOS Release 12.0

Table 7 Cisco IOS Software Release 12.0 Documentation Set

Books	Chapter Topics
• *Configuration Fundamentals Configuration Guide* • *Configuration Fundamentals Command Reference*	Configuration Fundamentals Overview Cisco IOS User Interfaces File Management System Management
• *Bridging and IBM Networking Configuration Guide* • *Bridging and IBM Networking Command Reference*	Transparent Bridging Source-Route Bridging Token Ring Inter-Switch Link Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN Cisco Database Connection NCIA Client/Server Topologies Cisco Mainframe Channel Connection Airline Product Set
• *Dial Solutions Configuration Guide* • *Dial Solutions Command Reference*	Dial-In Port Setup Dial-In Terminal Services Dial-on-Demand Routing (DDR) Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions ISDN X.25 over ISDN VPDN Dial Business Solutions and Examples
• *Cisco IOS Interface Configuration Guide* • *Cisco IOS Interface Command Reference*	Interface Configuration Overview
• *Network Protocols Configuration Guide, Part 1* • *Network Protocols Command Reference, Part 1*	IP Addressing IP Services IP Routing Protocols
• *Network Protocols Configuration Guide, Part 2* • *Network Protocols Command Reference, Part 2*	AppleTalk Novell IPX
• *Network Protocols Configuration Guide, Part 3* • *Network Protocols Command Reference, Part 3*	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
• *Security Configuration Guide* • *Security Command Reference*	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options

Table 7 Cisco IOS Software Release 12.0 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS Switching Services Configuration Guide* • *Cisco IOS Switching Services Command Reference*	Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing
• *Wide-Area Networking Configuration Guide* • *Wide-Area Networking Command Reference*	ATM Frame Relay SMDS X.25 and LAPB
• *Voice, Video, and Home Applications Configuration Guide* • *Voice, Video, and Home Applications Command Reference*	Voice over IP Voice over Frame Relay Voice over ATM Voice over HDLC Video Support Universal Broadband Features
• *Quality of Service Solutions Configuration Guide* • *Quality of Service Solutions Command Reference*	Classification Scheduling Packet Drop Traffic Shaping ATM QoS SNA QoS Line Protocols
• *Cisco IOS Software Command Summary* • *Dial Solutions Quick Configuration Guide* • *System Error Messages* • *Debug Command Reference*	

Note The *Cisco Management Information Base (MIB) User Quick Reference* publication is no longer published. For the latest list of MIBs supported by Cisco, see the *Cisco Network Management Toolkit* on Cisco Connection Online. From CCO, click on the following path: **Service & Support**> **Software Center** > **Network Mgmt Products** > **Cisco Network Management Toolkit** > **Cisco MIBs**.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller, who offers a wide variety of Cisco service and support programs described in "Service and Support" of *Cisco Information Packet* shipped with your product.

Note If you purchased your product from a reseller, you can access CCO as a guest. CCO is Cisco Systems' primary real-time support channel. Your reseller offers programs that include direct access to CCO services.

For service and support for a product purchased directly from Cisco, use CCO.

Obtaining Documentation

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly. Therefore, it is probably more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Registered CCO users can order the Documentation CD-ROM and other Cisco Product documentation through our online Subscription Services at http://www.cisco.com/cgi-bin/subcat/kaojump.cgi.

Nonregistered CCO users can order documentation through a local account representative by calling Cisco's corporate headquarters (California, USA) at 408 526-4000 or, in North America, call 800 553-NETS (6387).

Obtaining Technical Assistance

Cisco provides Cisco Connection Online (CCO) as a starting point for all technical assistance. Warranty or maintenance contract customers can use the Technical Assistance Center. All customers can submit technical feedback on Cisco documentation using the web, e-mail, a self-addressed stamped response card included in many printed docs, or by sending mail to Cisco.

Cisco Connection Online

Cisco continues to revolutionize how business is done on the Internet. Cisco Connection Online is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

CCO's broad range of features and services helps customers and partners to streamline business processes and improve productivity. Through CCO, you will find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online support services, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on CCO to obtain additional personalized information and services. Registered users may order products, check on the status of an order and view benefits specific to their relationships with Cisco.

You can access CCO in the following ways:

- WWW: www.cisco.com
- Telnet: cco.cisco.com
- Modem using standard connection rates and the following terminal settings: VT100 emulation; 8 data bits; no parity; and 1 stop bit.
  - From North America, call 408 526-8070
  - From Europe, call 33 1 64 46 40 82

You can e-mail questions about using CCO to cco-team@cisco.com.

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to warranty or maintenance contract customers who need technical assistance with a Cisco product that is under warranty or covered by a maintenance contract.

To display the TAC web site that includes links to technical support information and software upgrades and for requesting TAC support, use www.cisco.com/techsupport.

To contact by e-mail, use one of the following:

Language	E-mail Address
English	tac@cisco.com
Hanzi (Chinese)	chinese-tac@cisco.com
Kanji (Japanese)	japan-tac@cisco.com
Hangul (Korean)	korea-tac@cisco.com
Spanish	tac@cisco.com
Thai	thai-tac@cisco.com

In North America, TAC can be reached at 800 553-2447 or 408 526-7209. For other telephone numbers and TAC e-mail addresses worldwide, consult the following web site: http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml.

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, for your convenience many documents contain a response card behind the front cover. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.
Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

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